WeatherWatcher

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Introduction

Introduction to WeatherWatcher (WW)

WWP is an advanced monitoring program is a very flexible and robust system; a must-have tool for anyone wishing to their remote observatory.

Monitor your Observatory - Monitors and reports the environmental status, temperature limits and more. System can alert owner of these events or failures Text Messaging, or Email. In addition the system can be programmed by the end-user to react to specific events. The possibilities are truly amazing.

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Release Notes

Release Notes

This section contains information about changes to WeatherWtacher.

Version

v5.0.0. Initial release

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Chuck Faranda - Author

Special thanks to Ken Archer - product development.

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Technical Support

Technical Support

Before requesting technical support, please review this manual for troubleshooting instructions.

When requesting technical support, you must include the following information via email:

- Your name
- Telephone number
- E-mail address
- Version of Windows
- **The *exact content* of all error message displayed**
- **Describe the step-by-step process that created the issue**. If we cannot replicate your problem it will be very difficult to resolve it.

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System Requirements

System Requirements

WeatherWatcher requires Windows 2000™, Windows XP™, Windows Vista™, or Windows 7™ (or higher).

To use all the features of WeatherWatcher one of the following weather software packages is needed:

- Davis WeatherLink (v6 or higher)
- Ambient Virtual Weather Station (Pro or Internet editions)
- Weather Display
- Cumulus
- Any device capable of generating a Boltwood capable data files (other can be accomadate upon request)
-

The following hardware is required:

- Processor – Pentium™ or equivalent, or higher
- Recommended minimum memory size is 512 MB or larger. Processing larger images or opening multiple images simultaneously will require correspondingly larger memory. 2 GB memory is recommended for processing large arrays including DSLR images and CCD images larger than 6 megapixel.
- Disk Space – 20 MB for program installation
- Video Display – 1024x768, **16-bit color** or higher.
- Mouse
- Weather Station compatible with one of the above required weather programs (see a full list here).

- Boltwood compatible Cloud Sensor.
- PCSensor TemperHum

64-bit Operating Systems

Windows XP x64, Windows Vista x64, and Windows 7 x64 are supported.

Alternative Operating Systems

It may be possible to run WeatherWatcher under other operating systems; however, some limitations may apply and some configurations are not officially supported (no technical support available).

Operating System	Status
Apple Macintosh running Boot Camp and Windows	Supported (equivalent to running Windows on a regular PC)
Apple Macintosh running VMWare	Not a supported configuration; however, correct operation for both imaging and processing has been reported by customers using recent versions of VMWare.
Apple Macintosh running Parallels™	Not a supported configuration; not recommended.
WINE/Linux	Not a supported configuration. Customer reports indicate limited functionality.
Windows 95, 98, ME, NT	Not a supported configuration; will not install. These obsolete versions of Windows do not support functions required by current WeatherWatcher releases.

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Supported Weather Stations

Ambient Virtual Weather Station (VWS) - Supported Stations:

- All Davis Weather Stations, including the Vantage Pro, Vantage Pro Plus, Vantage Pro2, Vantage Pro2 Plus, Wizard III, Monitor II, and Perception
- All Oregon Scientific Weather Stations, including the WMR-100, WMR-918, WMR-928N, WMR-968 and WM-918
- La Crosse Technology WS-2300, WS-2305, WS-2308, WS-2310, WS-2315, WS-3600, and WS-3610
- Some Radio Shack Weather Stations, including the WX-200 and Accuweather Wireless Station 63-1016
- Huger WM-918 (same as the Oregon Scientific WM-918)
- Rainwise MKIII, WT-2000 and MH-1 Hazmat
- WeatherHawk Weather Stations
- Peet Bros Weather Stations

- Kestrel 4000
- Texas Weather Instruments Stations
- Columbia Weather Systems Weather Stations
- **Weather Display Supported Weather Stations:**
- Huger/Radio Shack/Oregon Scientific WM918/WX200,WMR-918/WMR-968/WMR-928N,WMR100,WMR200,WM-900H,63-1016
- Davis WMII, Wizard III, Grow, Vantage Pro/plus/6161/VP2 etc (with datalogger), supports soil temperature/moisture/leaf wetness and UV/solar (extracted data from logger too)
- ELV/Conrad/Huger WS2000/WS2010/WS2210/WS7000/WS2300/WS2305/WS2310/WS2315/Hyundai WS-05/WS2500PC/WS2510/3600
- La Crosse 2010,2110,2210,2308,2310,2315,2300,WS23XX,WS2350,2500,2510,3600/3610
- Peet Bros Ultimeter 100,500,800,2000,2100 and II
- Maximum Instruments Weathermax (with datalogger)
- Metron UWS 3000-ws
- Rain Wise WS2000/MK III (with data logger)
- Dallas 1 wire weather station (and version 3)
  Texas Inst. WR-25 and variations
- Heathkit ID -5001
- Climatronics Ultrasonic
- Novalynx WS-16 Weather Station
- Capricorn 2000
- ASOS station and a RAWS station
- Weather Hawk
- Environdata weather master 2000
- Kestral 4000
- Instromet
- Inspeed Vortex anenometer
  Vaisala WXT510 ultrasonic station
- HoneyWell TE923/Irox Pro/Nexus USB
- ELV WS500/La Crosse WS550 USB

- OS WMR100/200 USB
- IRDAM station via TCP
- WH1080PC via the Easy Weather Software
- Davis IP data logger (direct connection for Live data)
- PCSensor TemperHum

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Installation

Installation

WeatherWatcher is available via Internet download.

Important: WeatherWatcher require the installation of the ASCOM Platform, available at http://ascom-standards.org.

Internet Installation

1. Download the latest WeatherWatcher driver and software here .
2. You will be prompted to either 'Run' the installer or you can save it to a folder; double clicked the saved file with start the installer.
3. Follow the on-screen instructions to complete the installation.
4. Once the software has successfully installed you must enter the setup areas to input the proper setting before attempting to connect your hardware. To properly setup WeatherWatcher open the programs from Windows/Start/WeatherWatcher.

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Installation Troubleshooting

Installation Troubleshooting

We recommend that you install your new software in the daytime to allow ample time to setup and register your software.

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User-Level Accounts

User-Level Accounts

WeatherWatcher ACP should be installed using an Administrator-level account. Elevation will be automatically requested as needed in Windows Vista.

Normally software installed on Windows 2000/XP/Vista/7 from Administrator-level accounts will work on

User-level accounts. In rare cases, however, users who do not have Administrator privileges will not be able to access the license information and the software will not run.

The default Windows Registry security settings will allow user-level accounts to access the serial number that was entered by the installation software. However, it is possible to set up the default Registry permissions in such a way as to disable user-level access. This occasionally occurs in large institutions that have central administration of their computer systems. To fix this, do the following:

1.Log in as Administrator.

2.Go to the Start menu and click Run...

3.Enter regedt32 and click OK.

4.Open HKEY_CLASSES_ROOT\WeatherWatcher.Watcher

5.Using the Security menu Permissions, click Add... and include the class of users you want to have access to this key. Make sure they have at least read access. Read and write access is required.

6.Click OK.

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Basic WWACP Operation

Basic Operation

In the following discussion, it is assumed that the reader is generally familiar with programs that run under the Windows operating system.

All fields must be inputted in the same units (Metric, US) as your weather station is set to report its data.

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Configure Weather Station Software

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AAG CloudWatcher

See the AAG help file for information on enabling their full data file.

To Use:
check the 'AAG CSV' file box inWeatherWatcher's setup window
Select the AAG CSV file in the 'Sky Data From:" box

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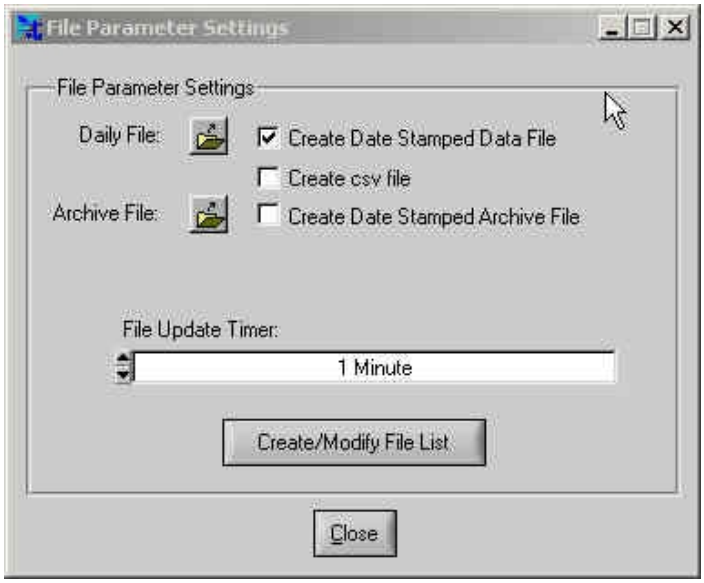
Ambient Virtual Weather Station

Setup for the Virtual Weather System Software

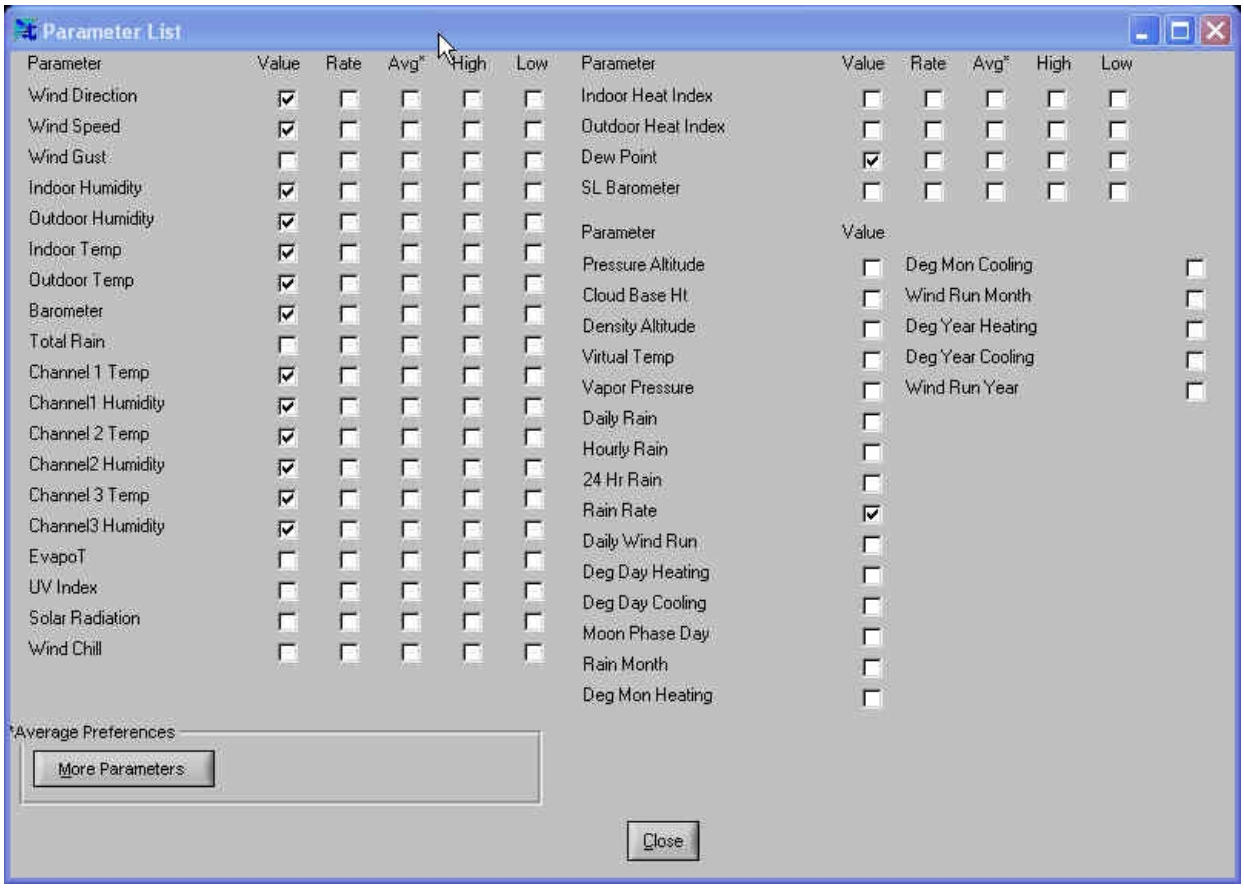
Select 'Settings' in the 'File Settings' from VWS' main menu.



"File Update Timer' should be set for a one minute interval or less to adequately update WeatherWatcher of weather changes.

You need to set up Virtual Weather Station (VWS) so the 'Settings/File Settings/Create/Modify File List' menu has the following values checked (only these as shown below):

Wind direction
Wind Speed
Indoor Humidity
Outdoor Humidity
Indoor Temp
Outdoor Temp
Barometer
Channel 1-3 Temp
Channel 1-3 Humidity
Dew point
Rain Rate



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Cumulus

Setup for Cumulus

Select the location of the data in WeatherWatcher's setup window and check the 'Cumulus' check-box.

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Davis Weather Link

Setup for Davis WeatherLink

Select the location of the data file (downld02.txt) in Watcher's setup window (do not include the file name, just the folder) and check the 'Weatherlink' checkbox.

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Weather Display

Weather Display Setup Procedure

Creating a daily.txt file in Weather Display
1) Weather Display allows the creation of custom HTML files by creating templates with a naming convention of "wxlocal" followed by a number and ending in ".html" for example, wxlocal4.html. The following format will give Weather Watcher a text file with the correct data format required by Weather Watcher:
<CODE>

%date%
Time Wind Dir Wind Spd Hum In Humidity Temp In Temp Raw Barom Temp Ch 1 Hum Ch 1 Temp Ch 2 Hum Ch 2 Temp Ch 3 Hum Ch 3 Dew Point RainRate
° mph % % °F °F in °F % °F % °F % °F in/hr
%time% %dirdeg% %avgspd% %indoorhum% %hum% %indoortemp% % temp% %baro% 0.0 0 0.0 0 0.0 0 %dew% %currentrainrate%

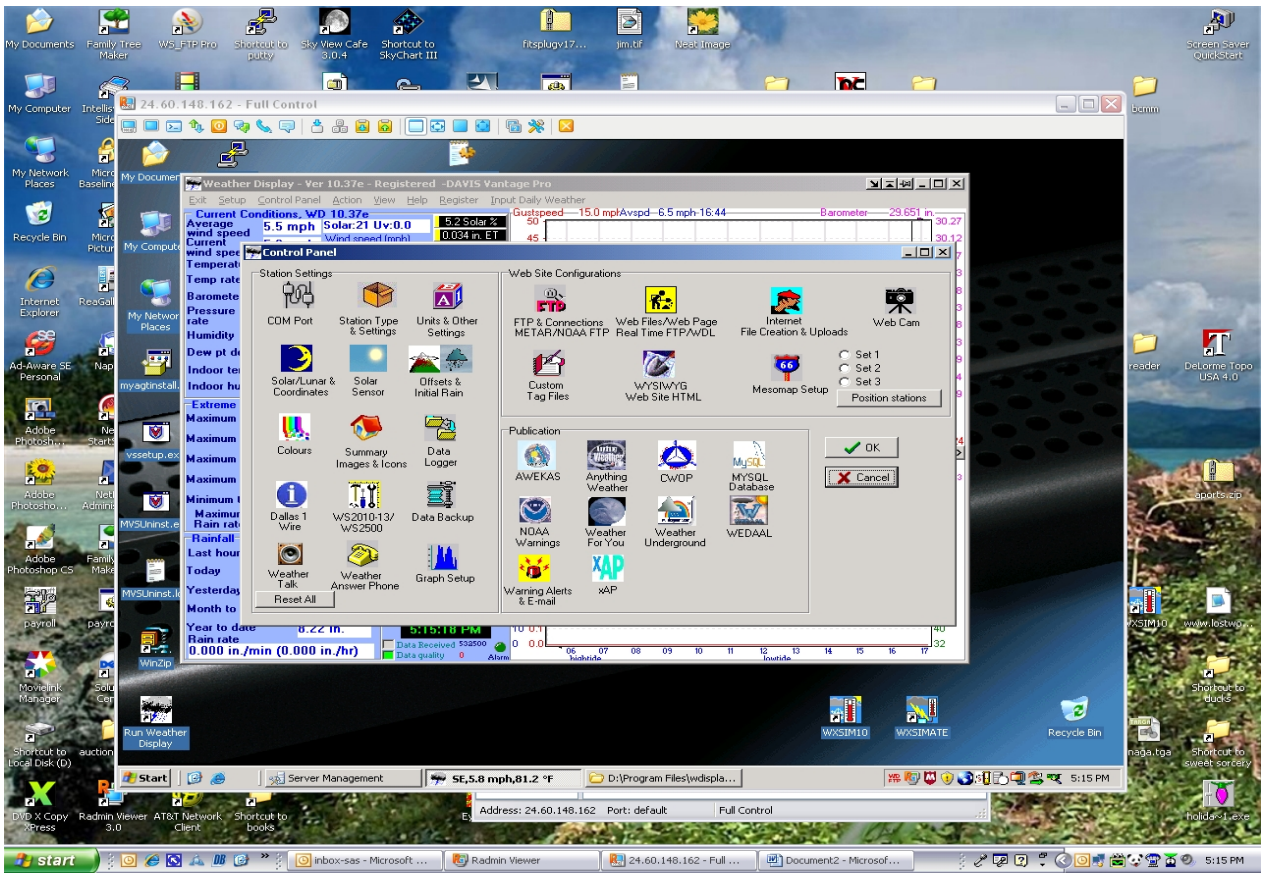
</CODE>
You can download the HTML file here.

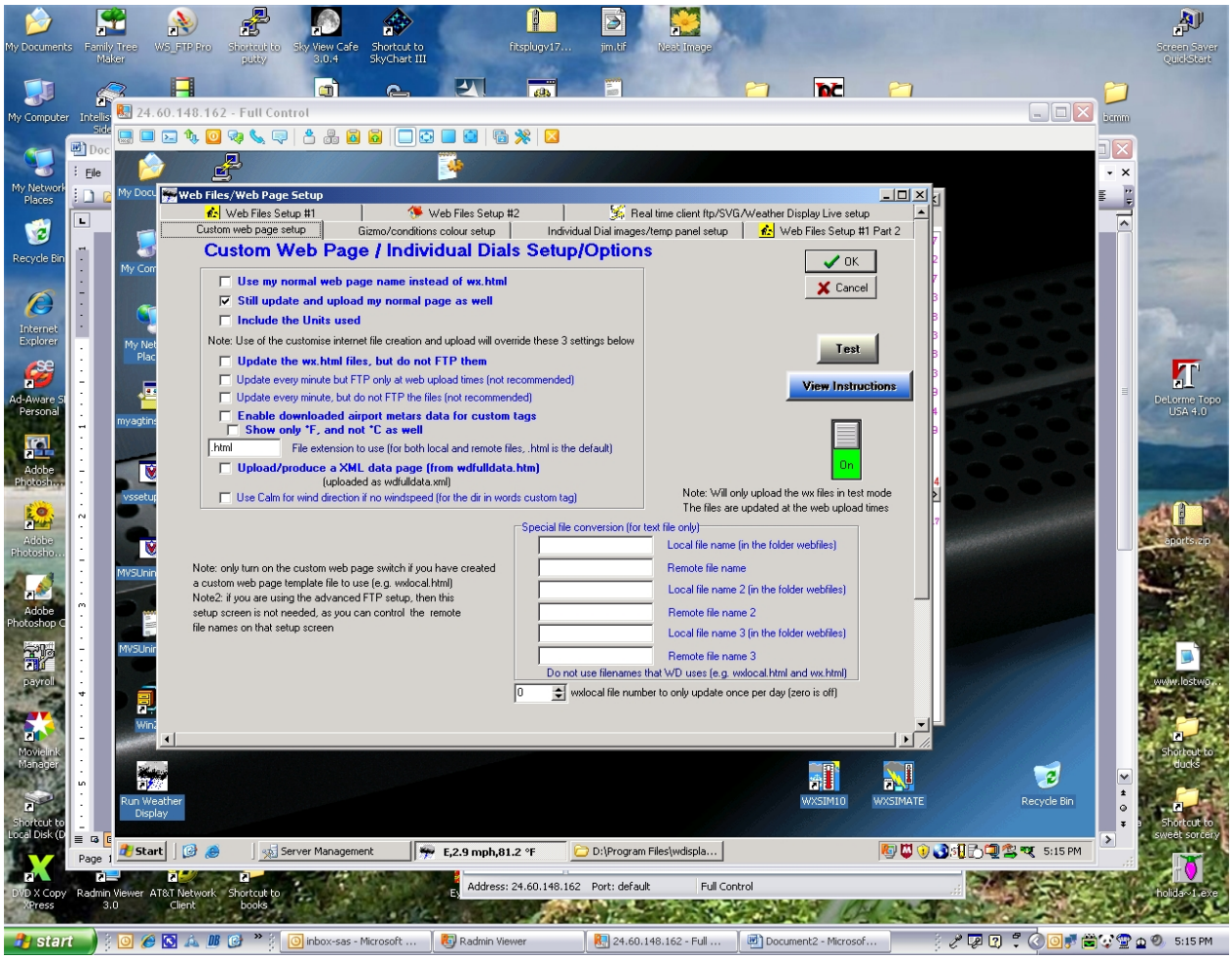
The code above is word wrapped, there should only be 4 lines of code.
Line 1 is just the tag for today's date.
Line 2 contains the Data Descriptions.
Line 3 is The Unit symbols for each piece of data.
Line 4 is the data tags and place holders for the data you will need for Weather Watcher.

Note: If you plan to use a remote temperature or humidity sensor instead of the main sensors for your readings, you will need to change the default placeholder values of '0.0' and '0' on line 4 in the appropriate columns under the ch1, 2 or 3 sensors.

2) Place your newly created template in the web files folder you defined when installing Weather Display.

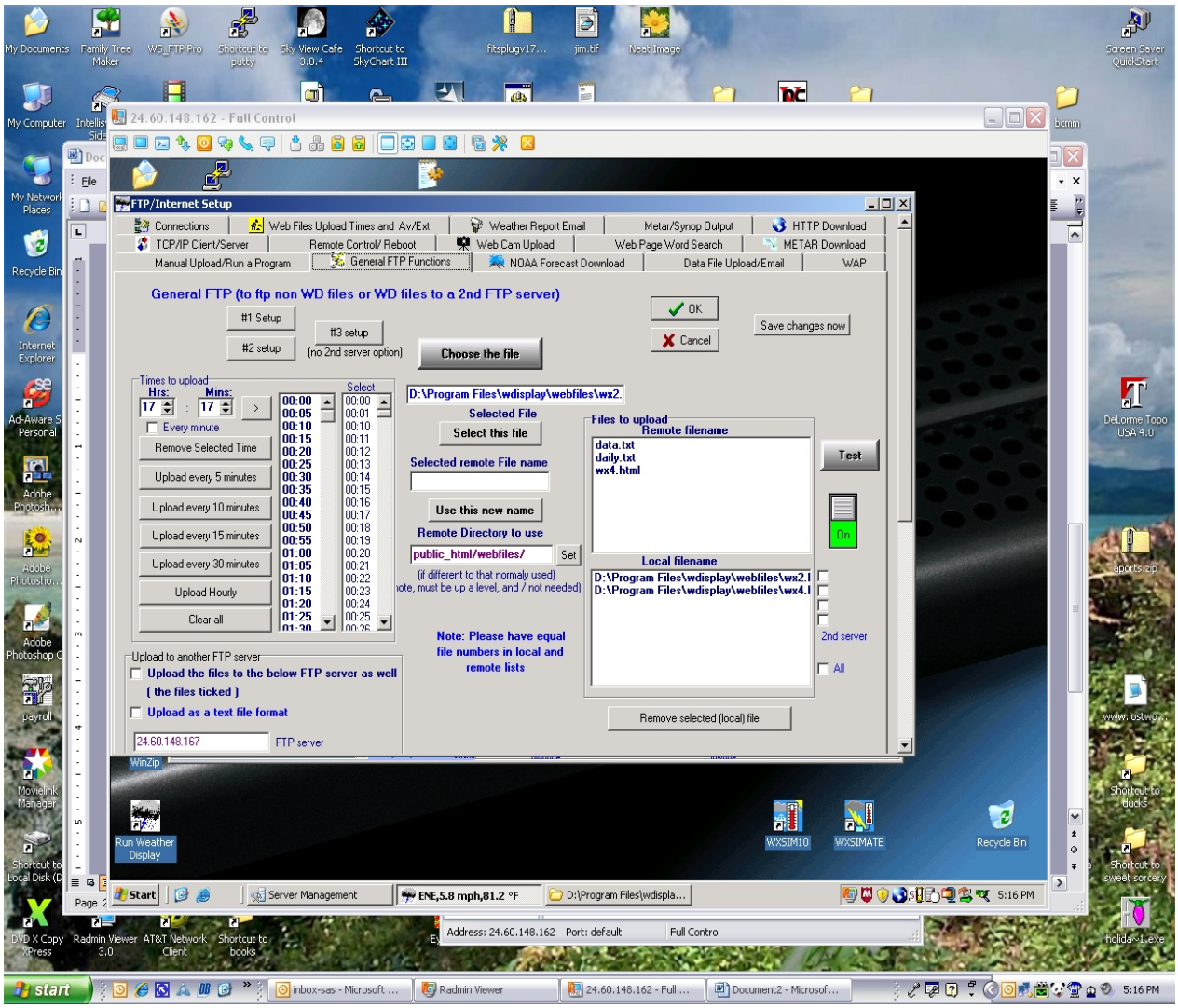
3) You now need to go into Weather Display and bring up the control panel from the tool bar. Go to the "Web Site Configurations" section, click on "Web Files/ Web Page Real Time FTP/WDL" button. When the configuration window opens, click on the "Custom Web Page Setup" tab. Locate and uncheck the "Include the Units used" line. Click ok to close the window. (If you already have custom pages, unchecking this will require you to add the units back in manually to your custom page templates)




Web Files/Web Page Setup
Web Files Setup #1
Web Files Setup #2
Real time client ftp/SVG/Weather Display Live setup
Custom web page setup
Gizmo/conditions colour setup
Individual Dial images/temp panel setup
Web Files Setup #1 Part 2
Custom Web Page / Individual Dials Setup/Options
OK
Cancel
Use my normal web page name instead of wx.html
Still update and upload my normal page as well
Include the Units used
Note: Use of the customise internet file creation and upload will override these 3 settings below
Update the wx.html files, but do not FTP them
Update every minute but FTP only at web upload times (not recommended)
Update every minute, but do not FTP the files (not recommended)
Enable downloaded airport metars data for custom tags
Show only °F, and not °C as well
.html
File extension to use (for both local and remote files, .html is the default)
Upload/produce a XML data page (from wdfulldata.htm)
(uploaded as wdfulldata.xml)
Use Calm for wind direction if no windspeed (for the dir in words custom tag)
Test
View Instructions
Note: Will only upload the wx files in test mode
The files are updated at the web upload times
Special file conversion (for text file only)
Local file name (in the folder webfiles)
Remote file name
Local file name 2 (in the folder webfiles)
Remote file name 2
Local file name 3 (in the folder webfiles)
Remote file name 3
Do not use filenames that WD uses (e.g. wxlocal.html and wx.html)
wxlocal file number to only update once per day (zero is off)
Note: only turn on the custom web page switch if you have created a custom web page template file to use (e.g. wxlocal.html)
Note2: if you are using the advanced FTP setup, then this setup screen is not needed, as you can control the remote file names on that setup screen
Run Weather Display
WXSIM10
WXSIMATE
Recycle Bin
start
5:15 PM

4) Back on the control panel, still under the “Web Site Configuration” section, click on “FTP & Connections METAR/NOAA FTP” button, when the configuration window opens, click on the “General FTP Functions” tab. Click the “Choose the File” button and navigate to the Weather Display web folder and select the file that was generated by your template. If your template was named “wxlocal4.html” the generated file will be called “wx4.html”. Once the file is selected, clicking on the “Select this File” button will add the file name to the “Remote Filename” window and add the file path and file name to the “Local Filename” window.
Now go to the “Remote Filename” window and click on the file name, it will now move the filename from the “ Remote Filename” window to the “Selected Remote File Name” box. Here, change the name to “daily.txt” and click on the “Use this new name” button. The new filename of daily.txt will be listed in the “Remote Filename” window.

5) You can now setup the “upload to second server” option if you are able to directly ftp to your computer where Weather Watcher resides, or you can let the file go to your web server and use a command line utility such as “wget” to automatically retrieve the file directly from your website. Refer to Weather Display's help file for configuring the FTP options and file generation intervals.



NOTE: These instructions assume you are already uploading weather data to a web site somewhere. If not, you will have to find an alternate way to move the file to where you need it unless Weather Watcher is on the same server.

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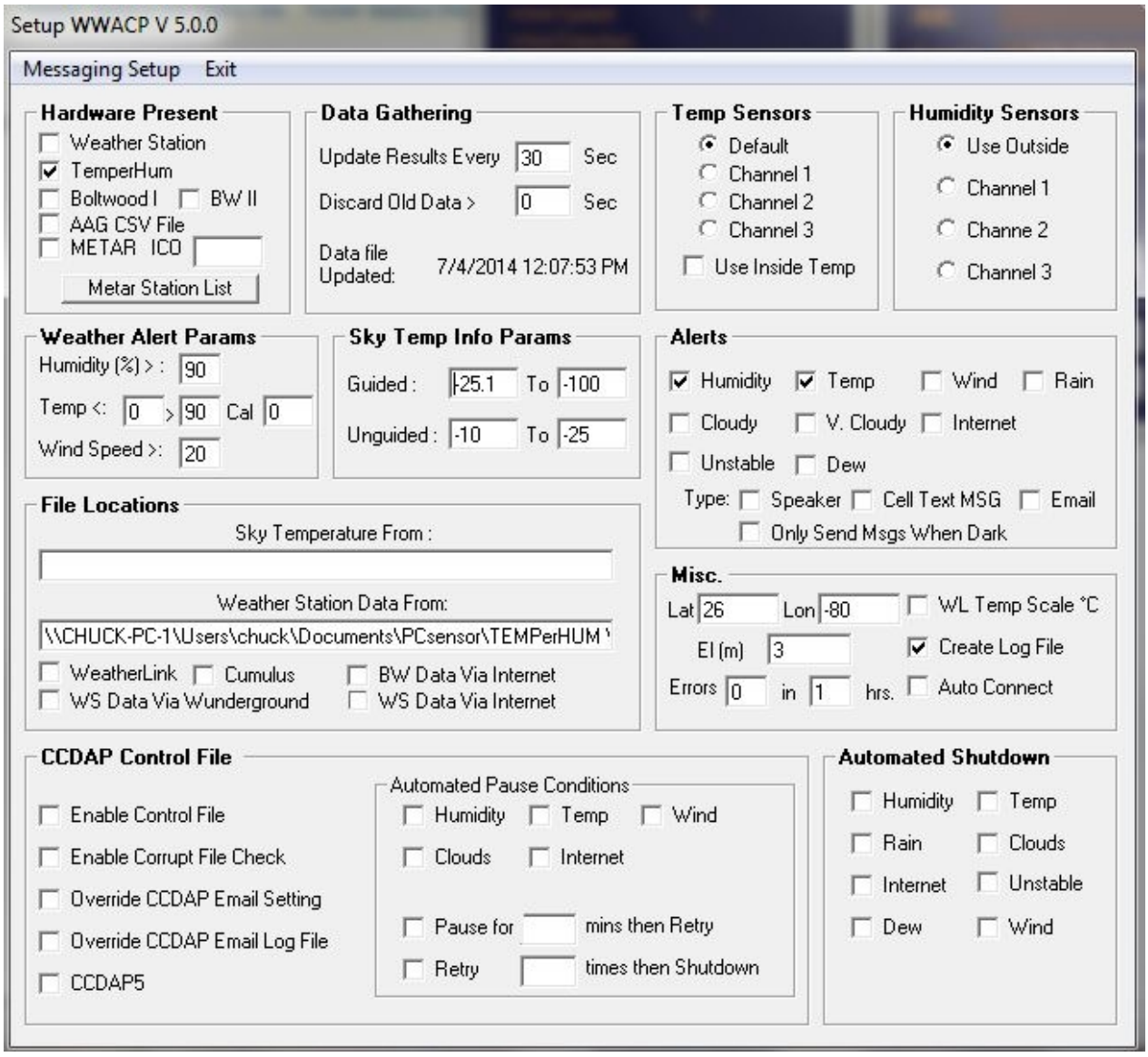
WWACP Setup

Select 'Setup' from the menu bar in WeatherWatcher will display the following dialog.



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Alert Parameters

Set these unsafe condition triggers to match your local conditions. If these limits are exceed the unsafe flag is raised.

Cal - enter a number to calibrate the BW I temperature sensor

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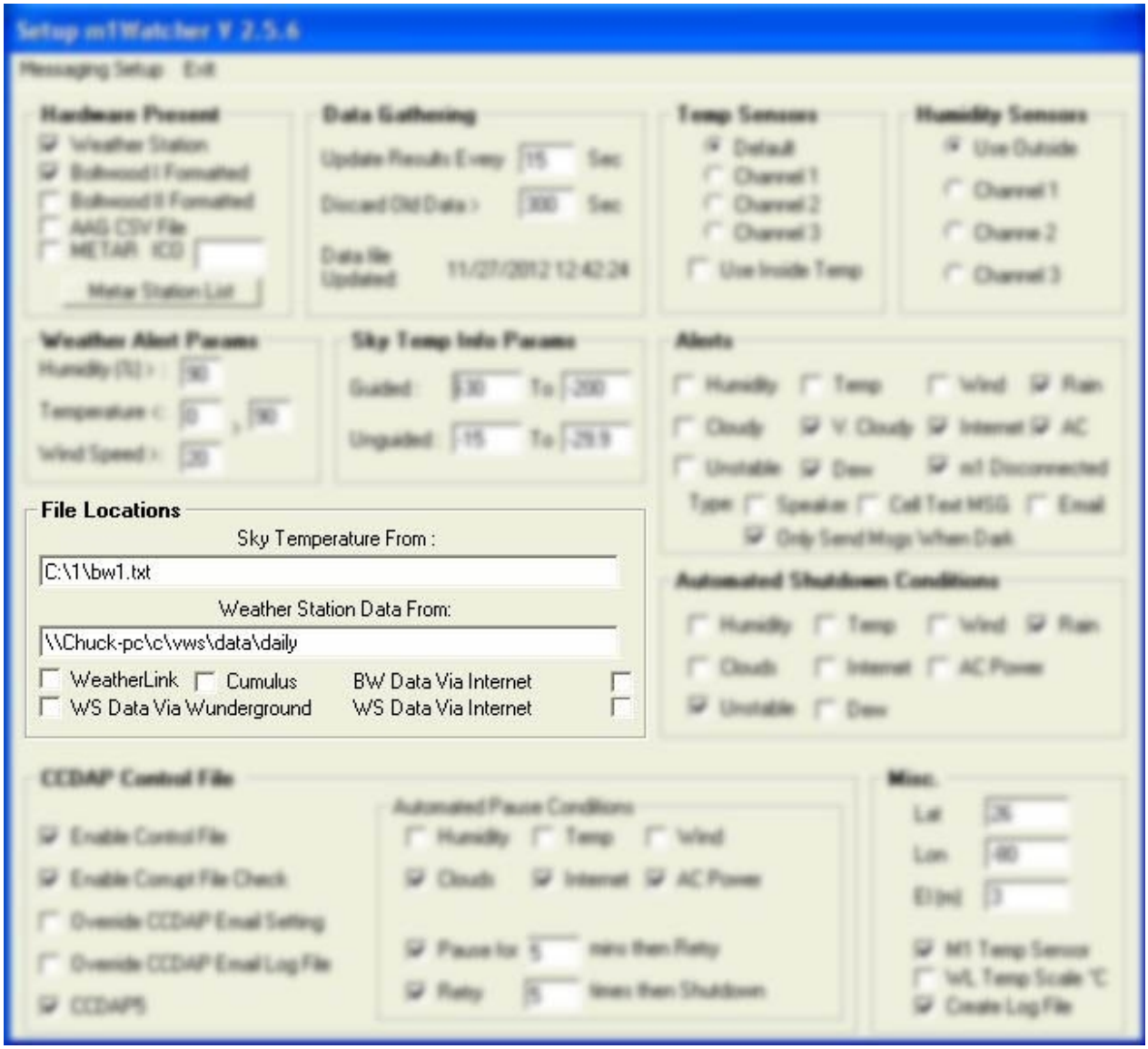
Data File Locations



Use this area to specify the locations of the needed weather data files. Double clicking in the white input boxes will reveal Windows Explorer to help locating the appropriate files. If your data files are stored on a remote server and will be accessed vi the internet then check the appropriate boxes and input the URLs in the boxes.

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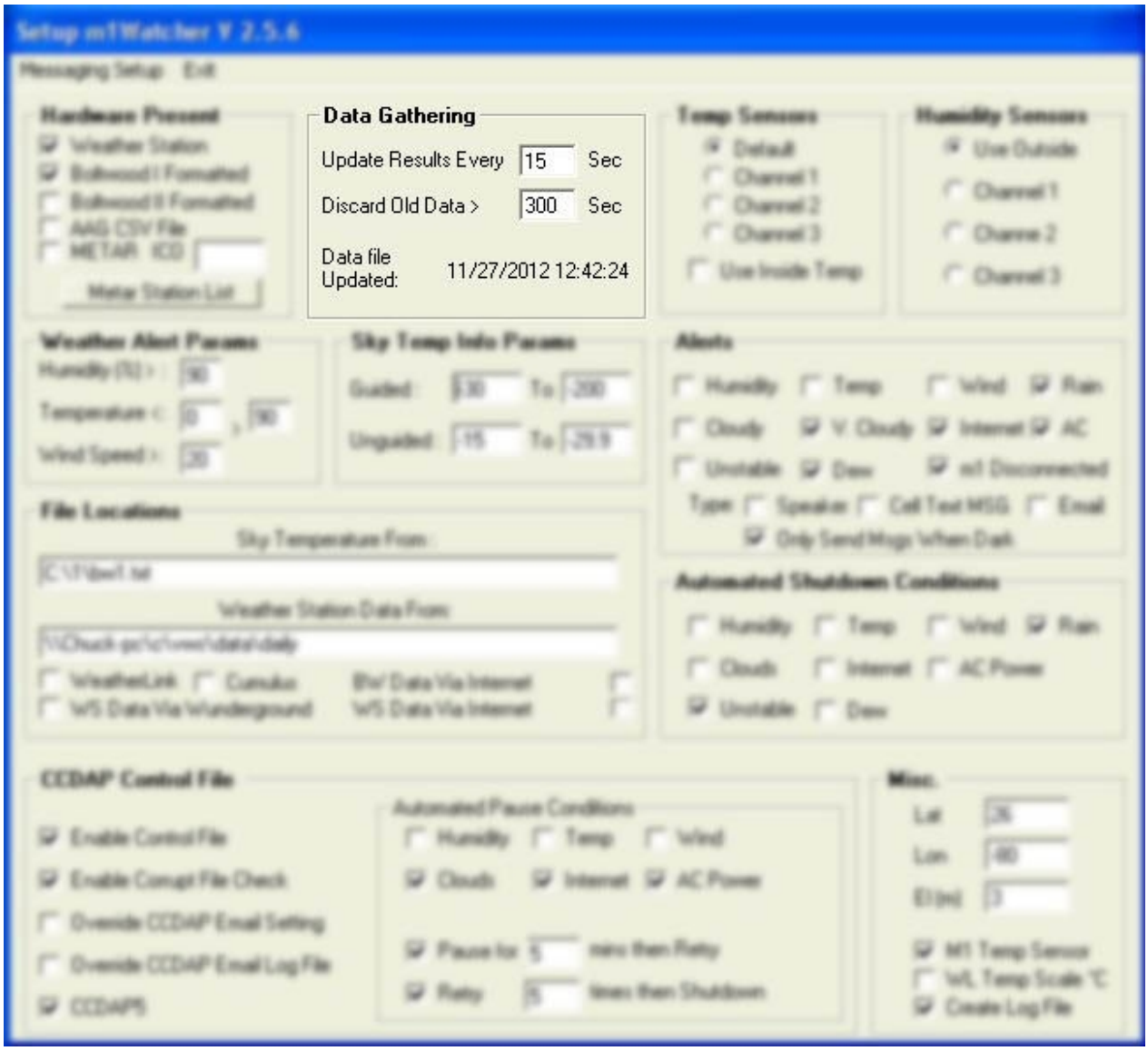
Data Gathering



'Update Results Every' is the interval, in seconds, for how often weather data is retrieved.

'Discard Old Data >' will alert user when data file is older than set-point (max. 300), entering '0' will disable this feature.

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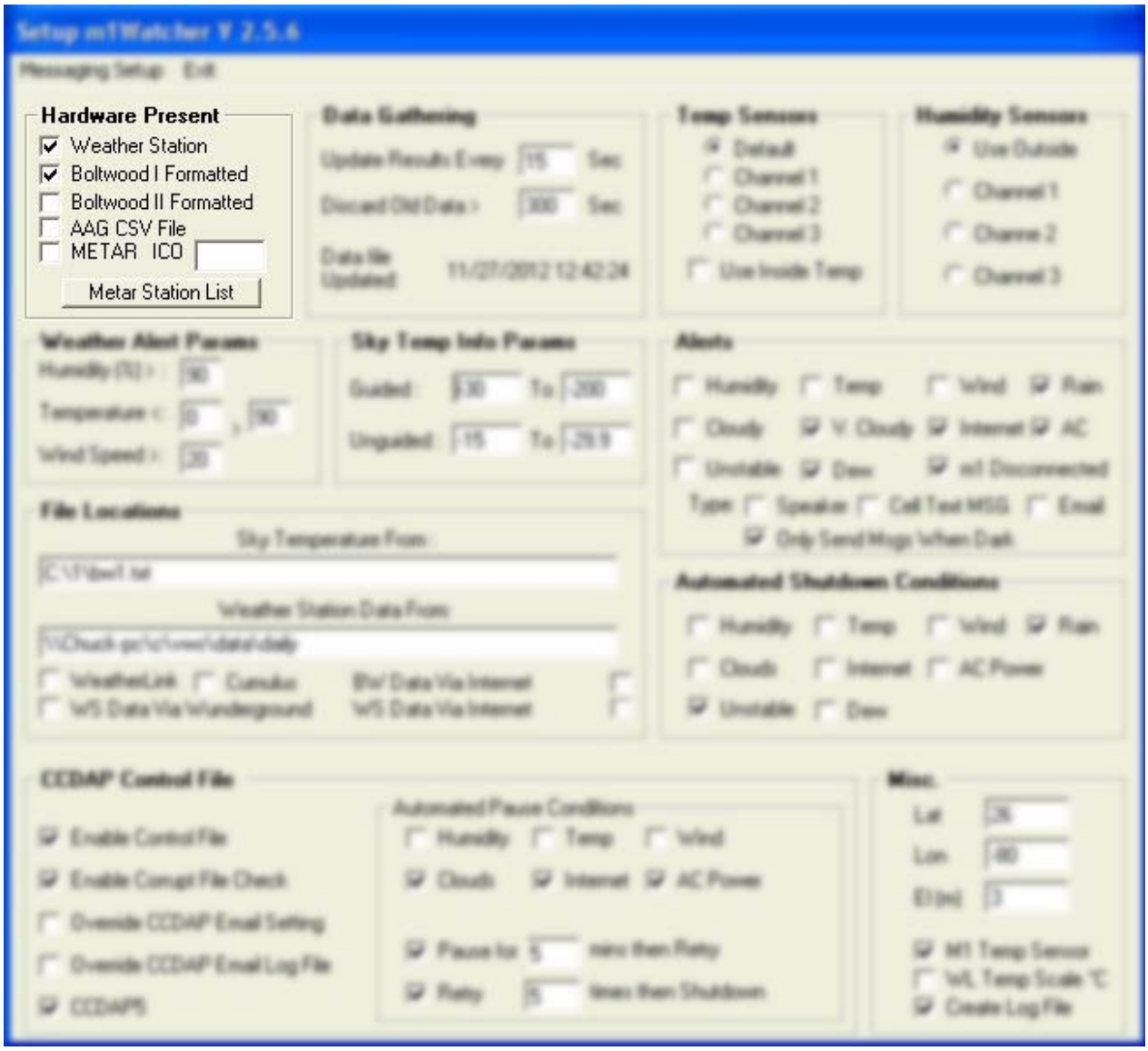
Hardware Present



Check the appropriate hardware to match the hardware you have installed.

Weather Station - check this box if you have one of the compatible weather stations and software connected then select the data file location in the 'Weather Station Data From' box. Note: double clicking inside the file selection box will bring up a file explorer to aide in locating the files. If you are not using VWS as your weather station software then check the box for the software you are using.

PCSensor TemperHum - WeatherWatcher will gather temperature and humidity data

You may also fetch files via the interent by placing the correct URL or IP address then checking the appropriate check boxes located below the file box.

Boltwood I Formated - check this box if you have a Boltwood I or any other device that stores data in the BW I file format then double click the 'Sky Temp From' box to selected the data file.

Boltwood II Formated - check this box if you have a Boltwood II or any other device that stores data in the BW I file format (e.g. AAG Cloud Watcher will produce a BWII file) then double click the 'Sky Temp From' box to selected the data file.

AAG CSV File - check this box to access the AAG Cloud Watcher's long file that includes wind speed and other weather station data. This selection will disallow all other hardware selections. Point to the AAG CSV file from the 'Weather Data From' selection box.

METAR - WeatherWatcher will gather weather station data from local METAR stations in your area. So, you can take advantage of some of th advanced features of WeatherWatcher even if you do not have weather station hardware.

	If you do not have any weather station hardware checking the 'METAR' box will allow you access to a weather station on the METAR network in your area. Press the 'Metar Station List' button to access a list of available station by State. You will need Internet access to use this feature.

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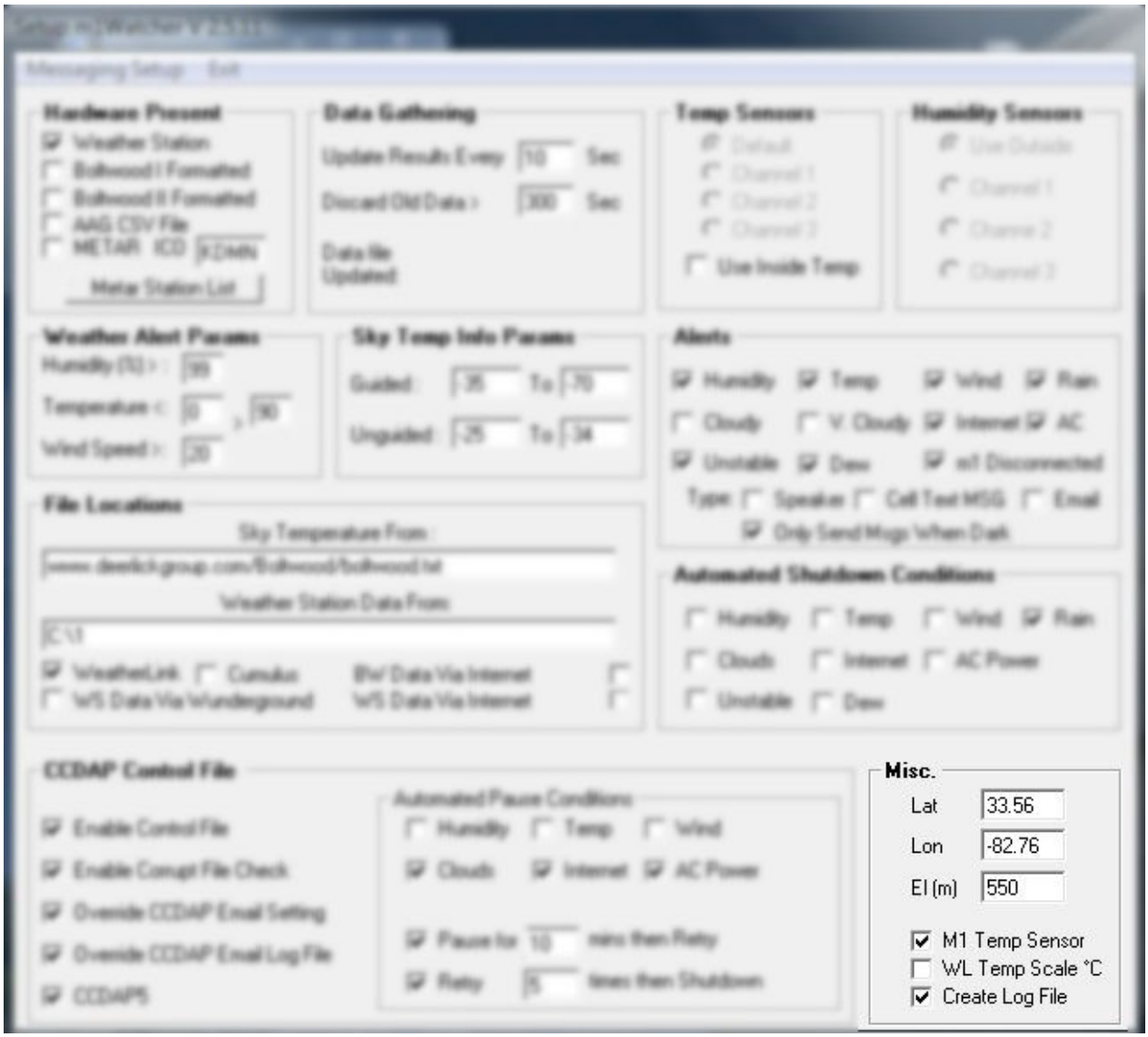
Misc.



Latitude, Longitude, and elevation of site. This data is used to determine dark or light conditions (this feature is ignored and determined by the BWII when present)

Reset Errors - input the number of errors before WeatherWatcher raises the unsafe flag, and the number of hours before counter is reset to zero

You can choose to use the temperature sensors contained in the m1's keypad or its remote sensors instead of the ones contained in the weather station equipment

Checking the 'Create Log File' box will log all alert data and errors to a log file named 'WeatherWatcher_log.txt' in your ..\Documents and Settings\All Users\Documents folder

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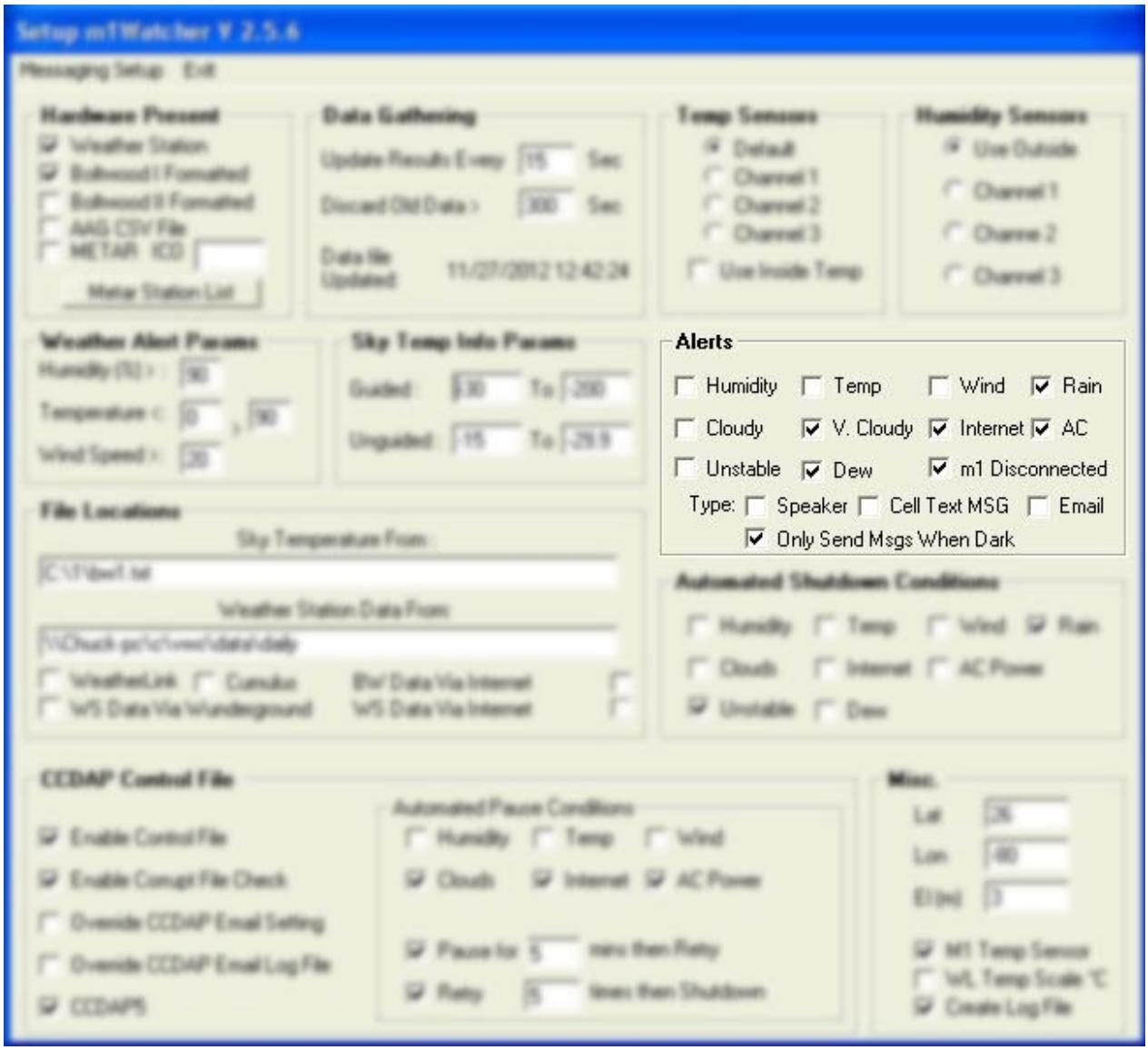
Sending Alerts



Check the boxes for events that will raise the unsafe flag to notify users and client applications that conditions are unsafe. **Users MUST check the appropriate boxes. If no alert boxes are checked then the unsafe flag will not be raised even for rain!!!!**

Check the boxes for the type of events that will trigger WeatherWatcher to alert the user.

Select the 'Types' of alerts desired, the 'Only Send Msgs When Dark' will reduce the number of unnecessary alerts during the daytime.

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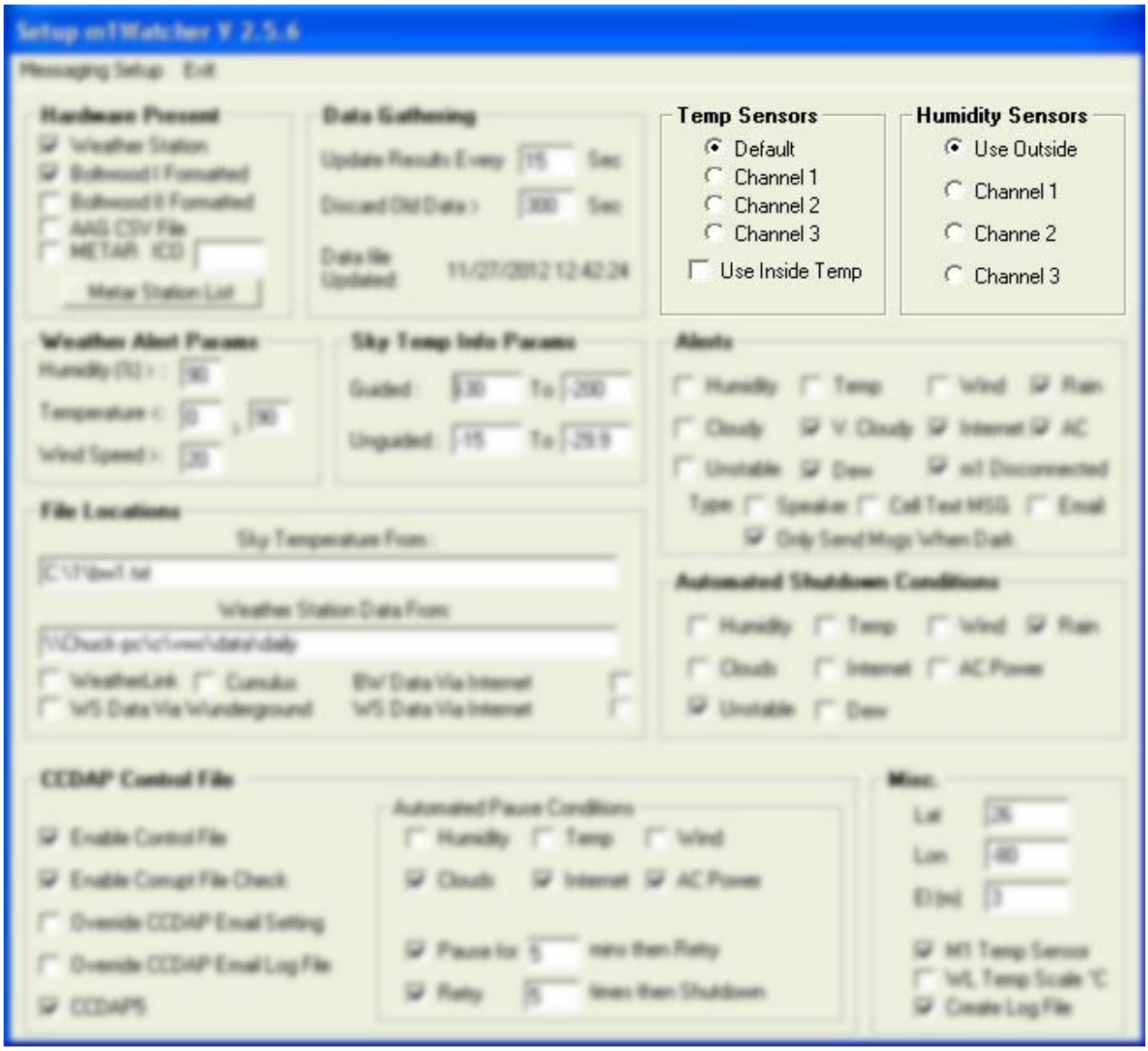
Sensors



Select the channel that you your monitors occupy.

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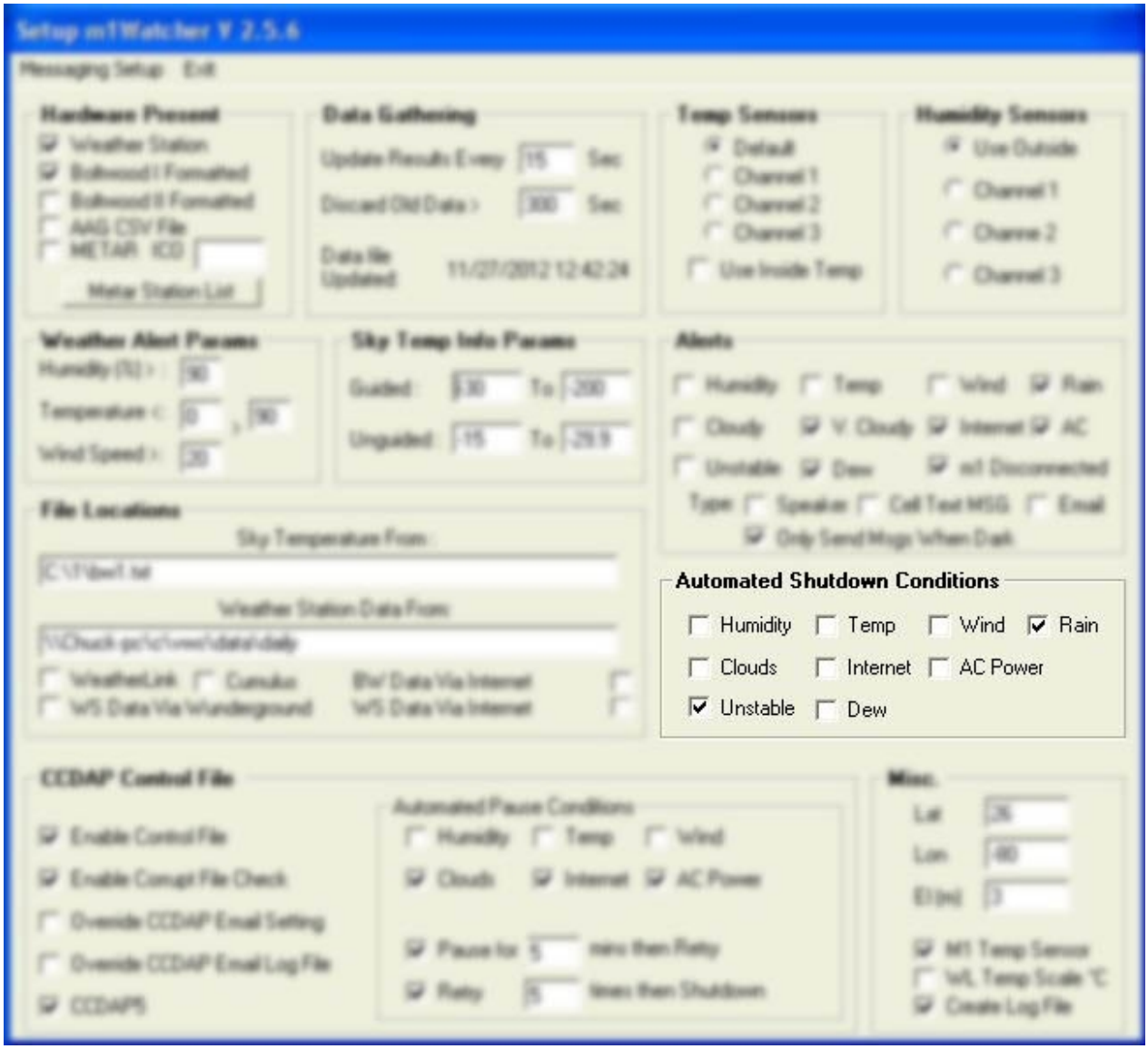
Shutdown Triggers



Select the events that will signal your automation program (ACP, CCDAP, etc.) to shutdown your observatory

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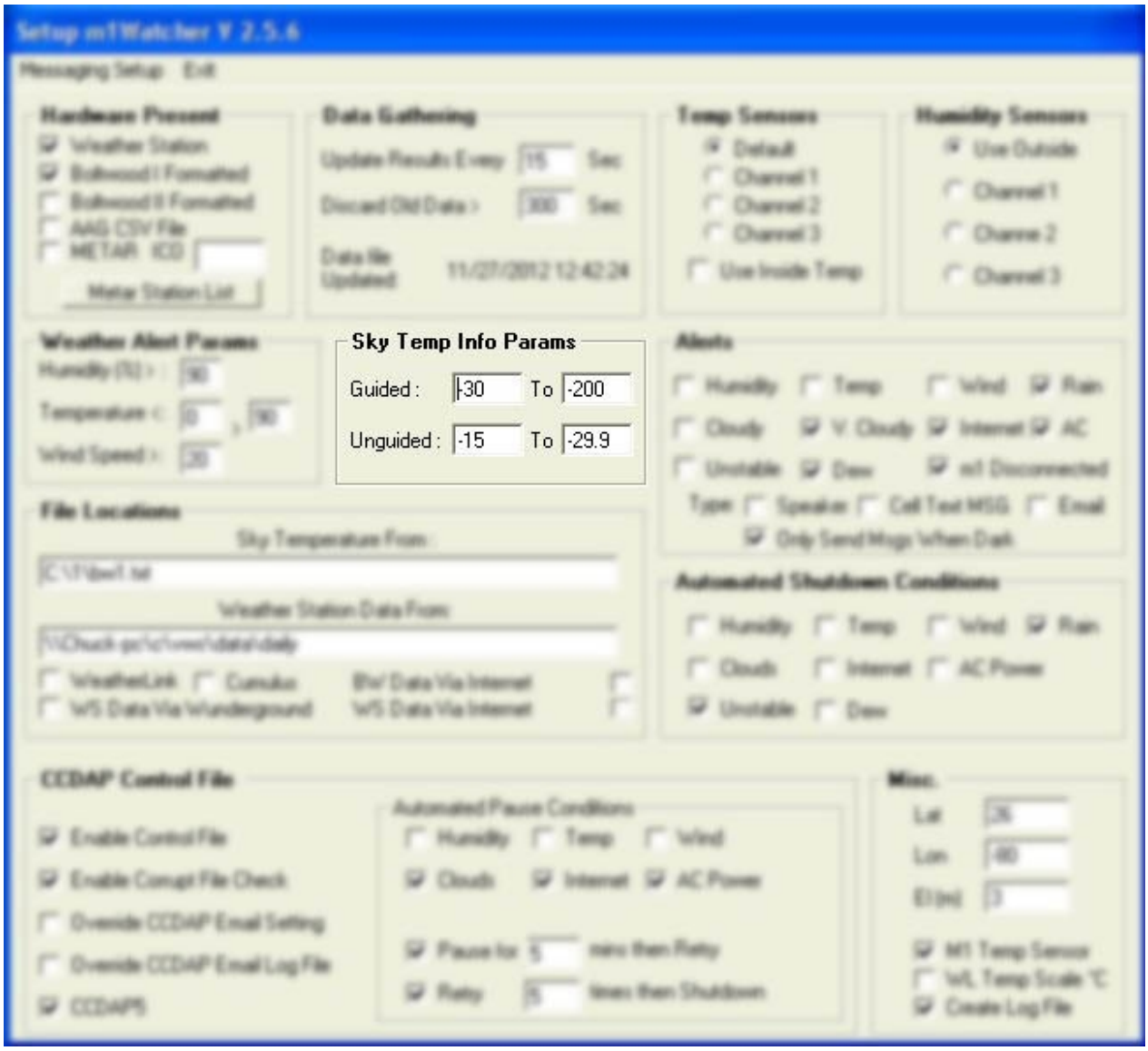
Sky Temperature



Set the upper and lower limits for the sky temperatures that suite your guiding needs based on the sky temperature reading reported by your cloud sensor. These parameters can be different for every site based upon seeing conditions. Therefore, some trial an error training will be needed to find the settings that best suit your needs and conditions.

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Scripting

Scripting

WeatherWatcher provides an ActiveX Automation interface for scripting and externally controlling the Dome via the conventions outlined in the ASCOM Platform documents. To access these documents refer to the developer area in your ASCOM folders contained in your Windows Start menu.

WeatherWatcher's is also an ActiveX Automation interface for scripting and externally accessing the Watcher.

ActiveX can be accessed from just about any standard scripting or programming language, including VBScript, JScript, Java, Perl, Visual Basic, Visual C++, etc. Using ActiveX, you can even control WeatherWatcher from Excel spreadsheet macros.

WeatherWatcher is compliant with ASCOM scripting. This allows it to operate with a wide variety of astronomical software products such as planetarium programs, telescope control software, and dome control systems. Sample scripts are available for downloading from the ASCOM web page http://ascom-standards.org.

Scripting Languages

The most commonly-used scripting languages on the Windows platform are VBScript and JScript.

VBScript looks like a simplified version of Visual Basic (thus the name), but you *do not* require Visual Basic to create or run scripts. VBScript code is run by the Windows Scripting Host, which is included in Windows.

Similarly, JScript looks like Java code. JScript is run by the very same Windows Scripting Host that runs VBScript. Deciding which version to use is simply a matter of user preference.

VBScript and JScript allow you to write simple scripts using only the **Notepad** text editor, and run by double-clicking them in the Explorer.

Full documentation on the scripting languages is also available for download; please see Windows Scripting Reference,

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Sample Scripts

Sample Scripts

In VBScript, you can access the WeatherWatcher as follows:

```
Dim watcher ' "The" Watcher object
Set watcher = CreateObject("WeatherWatcher.Watcher")
watcher.Connected = True

if Not watcher.Connected Then
   wscript.echo "Failed to connect to WeatherWatcher."
   Quit
End If

wscript.echo watcher.Name

watcher.Connected = False
```

If you want to try this, just copy the above code into a text file named "test.vbs". Double-click on the file to run it.

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Windows Scripting Reference

Windows Scripting Reference

Scripting Home Page

A variety of information is available on Microsoft's Scripting Home Page at http://msdn.microsoft.com/en-us/library/ms950396.aspx. Language definitions for VBScript and JScript are included on this page.

ASCOM Initiative

A master site for astronomical scripting, which includes sample scripts using WeatherWatcher and other applications, is available on the ASCOM web page http://ascom-standards.org.

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ASCOM Properties and Methods

ASCOM Properties and Methods

Please refer to the ASCOM web site http://ascom-standards.org for a description of the Properties and Methods used in the ASCOM-standard interfaces.

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WWACP Properties

WeatherWatcher - See the property and methods categories for details on the available methods and properties.

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Actively Monitoring

Property

ActivelyMonitoring (read-only, Boolean)

Syntax

ActivelyMonitoring

Remarks

Reports whether WW is monitoring conditions.

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AmbientTemperature

Property

BarometricPressure (read-only, Single)

Syntax

AmbientTemperature

Remarks

Reports barometric pressure.

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BarometricPressure

Property

BarometricPressure (read-only, Single)

Syntax

BarometricPressure

Remarks

Reports Barometric Pressure

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Connected

Property

Connected (read-write, boolean)

Syntax

set - Connected = true/false

get - Connected

Remarks

Sets/Gets connected state.

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Darkness

Property

Darkness (read-only, String)

Syntax

Darkness

Remarks

Reports light/dark conditions

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DewPoint

Property

DewPoint (read-only, Single)

Syntax

DewPoint

Remarks

Reports Dew Point

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InsideTemperature

Property

InsidetTemperature (read-only, Single)

Syntax

InsideTemperature

Remarks

Reports Inside Temperature

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Internet

Property

Internet (read-only, String)

Syntax

Internet

Remarks

Reports Internet status (Ok or Problem)

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Name

Property

Name (read-only, String)

Syntax

Name

Remarks

Reports WeatherWatcher

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Precipitation

Property

Precipitation (read-only, Boolean)

Syntax

Precipitation

Remarks

Reports Precipitation condition.

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RelativeHumidity

Property

RelativeHumidity (read-only, Single)

Syntax

RelativeHumidity

Remarks

Reports Relative Humidity

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Safe

Property

Safe (read-only, Boolean)

Syntax

Safe

Remarks

Reports whether the conditions are safe.

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SkyStatus

Property

SkyStatus (read-only, String)

Syntax

SkyStatus

Remarks

Reports clear, cloudy, etc.

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WindDirection

Property

WindDirection (read-only, Boolean)

Syntax

WindDirection

Remarks

Reports Wind Direction.

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WindCondition

Property

WindCondition (read-only, String)

Syntax

WindCondition

Remarks

Reports calm, windy, etc.

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WindVelocity

Property

WindVelocity (read-only, Single)

Syntax

WindVelocity

Remarks

Reports WindVelocity.

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WWACP Methods

Precipitation

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Emailm1

Syntax

Emailm1 (email address to, email message)

Parameters

String - CSV - email address to, email message

Returns

Boolean - True if successful

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Using WWACP with other Client Software

It is highly recommended to always start WeatherWatcher as a stand-alone program and leave it running and connected before connecting any clients or performing scripts. Doing so will prevent subsequent client connections from having to re-establish Ehternet connections (this can take >5 seconds and is inherent to the protocol).

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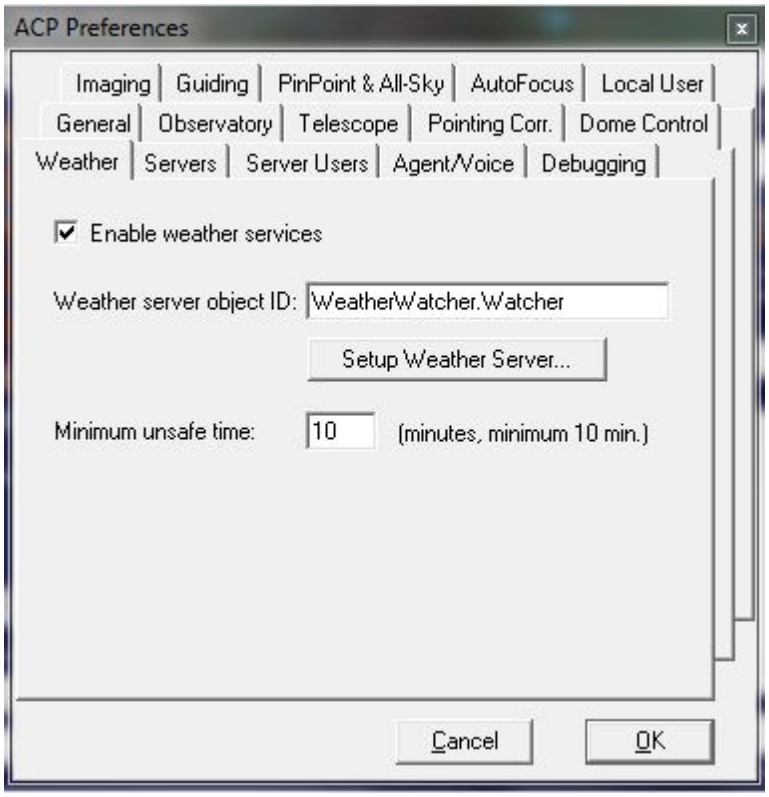
ACP

ACP Setup Procedure

If you put a script called **-Weather.xxx** (xxx=vbs,js) in the same directory as .exe, it will be automatically run when detects that the weather has become unsafe. You can use this to (at a minimum) park your scope and close your dome or roof. If you have turned on "Automatically home and close dome AFTER scope is parked" (Dome tab of Preferences), then all your weather safety script needs to contain is:

```
Sub Main()
    Telescope.Park
End Sub
```

This will call the telescope's park method, and the auto-home/close logic will take care of your dome. The logic in Telescope.Park tries its very best to assure that your scope is parked before closing the shutter or roof.



Under the Preferences/Weather tab rename the file in the 'Weather Server object ID' box to WeatherWatcher.Watcher'. Then click the setup weather
server button to select where your data files are located.

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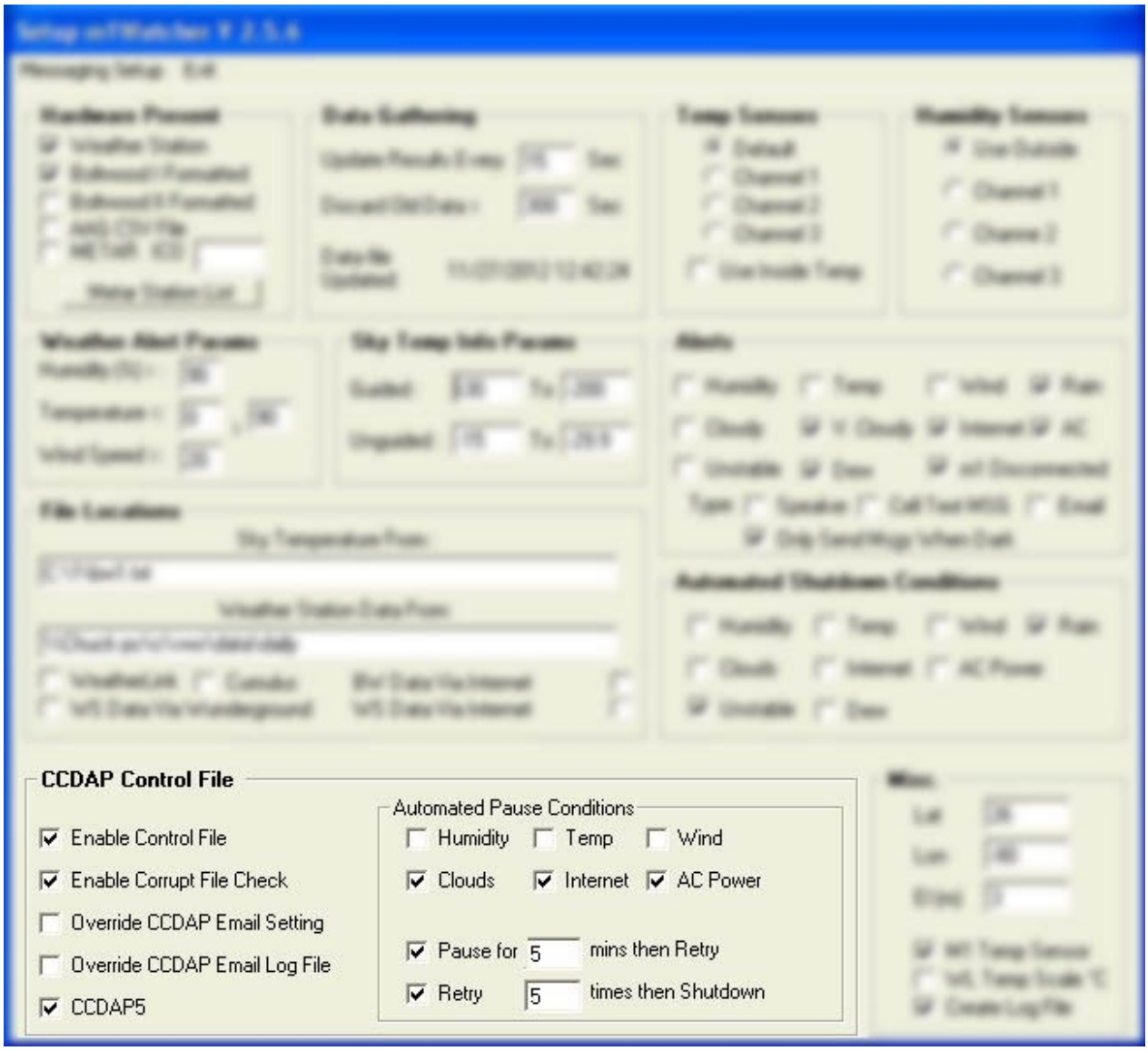
CCD Autopilot



Usage:

Via WeatherWatcher's very sophisticated weather/environment monitoring system, CCDAP runs can be controlled to react to numerous events such as if primary power is lost, bad weather conditions, loss of Internet. Options included pausing, aborting, and gracefully closing the observatory and shutting down. You can be notified of this by email or text message, along with any additional text, identifying the reason for the changes.

Note: WeatherWatcher produces a Boltwood II compatible file named WeatherWatcher_Data2.txt that can be use in clients like CCDAP. e.g. If you have a Boltwood I cloud detector and a Davis weather station WeatherWatcher will create a BWII file from those unit's compiled data.

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File Locations

All data files needed and/or created by WeatherWatcher are saved in the following locations:

Vista/Win7/ Win 8 = ...\ProgramData\WeatherWatcher folder
XP = ..\Documents and Settings\All Users.WINDOWS\Application Data\WeatherWatcher

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